



Sierra Forest Legacy
Protecting Sierra Nevada Forests and Communities



THE
WILDERNESS
— SOCIETY —



CALIFORNIA
NATIVE PLANT
SOCIETY



April 8, 2016

To: Forest Carbon Action Team

RE: Comments on the California Forest Carbon Plan Concept Paper: Managing our Forest Landscapes in a Changing Climate, authored by the Forest Climate Action Team (FCAT)—March 9, 2016.

We understand that this Concept Paper is an “overview of proposed goals and strategies of the under-development Forest Carbon Plan” and that you are seeking comments on the draft Concept Paper at this time and that CARB will use this document as a basis for carbon sequestration and reduction of greenhouse gas and black carbon emissions in the 2016 Scoping Plan Update.

I. General Summary

The FCAT Concept Paper has several appropriate goals and policy framing for achieving resilient forests that will support forest and watershed resilience, limit fragmentation, and help stabilize carbon storage in the future. Unfortunately, the multi-agency authorship has created a misalignment in the vision and blueprint for moving forward. The contradictory focus on both short-term “sustained yield” forest management actions juxtaposed with statements characterizing the negative impacts of forest fragmentation, fire suppression, and past logging are at cross purposes in the document. There is only a cursory discussion of the changes in long-term management practices such as increased, landscape-level fire use and retention and enhancement of large tree dominated old forest condition needed to accomplish forest carbon goals.

Clear, science-based definitions of key terms such as sustainability, fragmentation, and black carbon in the context of an active fire regime are absent in the current draft concept paper.

The need for a robust science review of key concepts and clarification of divergent and contradictory visions is highly evident. An accurate characterization of fire regimes and effects,

the description of the scientific basis and measures associated with broad concepts such as sustainability and fragmentation, and balanced discussions of forest resource outputs across jurisdictions with very different management guidelines, is sorely needed in the document.

Coordination and consistency with other plans such as the Draft Short-lived Climate Pollutant Plan, the California Wildlife Action Plan, State Fire Plan, CA Water Plan, and various federal mandates pertaining to public lands will be needed to maintain consistency between agencies, and will better inform policy makers and the public in support of the final Forest Carbon Plan.

Finally, the characterization of Forest Service timber outputs and management are inappropriate and simplistic in light of the broader Forest Service mandate to manage for ecological integrity and strong sustainability. The current characterization should be stricken from the document.

2. Vision Statement—Sustainable forests that are net sinks of carbon. (Pg. 1)

Comment: Absent a science-based definition of “sustainable” the Vision Statement seems to validate and even promote a broad contradictory range of interpretations, some science-based, and some politically motivated and therefore less likely to promote carbon stability in the forest sector. One such example is to conflate “sustained-yield” management with ecological, science-based sustainable forest ecosystems which are managed through the use of the best available science to address composition, structure, function, connectivity, and species diversity at a range of appropriate scales. These public forests sustain a wide range of public benefits while “working forests” have narrower economic goals that can run counter to longer term carbon stability.

Additionally, the Concept Paper (CP) suggests the California Forest Practice Rules provide a level of logging that is a “near perfect example of sustained yield” and one that represents sustainable forest management and carbon stability. The CP fails to discuss the contribution of short-rotation plantation forestry practices to widespread increased susceptibility to severe fire effects (e.g., Rim Fire--15,000 ac. of plantation mortality; King Fire—30,000 acres of plantation mortality on private lands) and similar negative effects in similar stands on public lands. These homogeneous conditions are prone to density and drought-driven beetle mortality that are impacting plantations in the Sierra Nevada. As noted in a recent forest health report on the Sierra National Forest, “Pine plantations in both districts have been the hardest hit by western pine beetle (*Dendroctonus brevicomis*, WPB) due to their high proportions of even-aged trees, at high densities.” The report further states, “Entire patches of older plantations that would have previously been regarded at lower risk – low basal area, minimal brush competition, and adequate spacing – were completely infested within a single year (Figures 2 and 3). (Sierra NF—Forest Health Report 2015).



Figure 2 (right, Bass Lake RD) and 3 (left, High Sierra RD). Recent western pine beetle-kill in mature Ponderosa pine plantations, previously thinned.

Vision Statement—Protect from Fragmentation (Pg. 2). Forests that are protected from fragmentation and conversion, and that provide a diverse range of quality, interconnected habitat types for terrestrial and aquatic wildlife species, including listed and non-listed species.

Comment: Absent a science-based definition of forest “fragmentation,” the Concept Paper leaves open for interpretation a simplistic vision of forest cover versus barren (or conversion) as sufficient to qualify as sustainable as distinguished from an assessment of ecological integrity of a unit of forest cover on the landscape. Lacking clear scientific definition, forest practices that may be cutting slightly less than growth in short-term rotations, producing a landscape condition that has no historic analog, may yet qualify as non-fragmented forest cover. A science-based definition would view a range of native forest conditions (structure, function, process, composition, connectivity and diversity) as benchmarks for judging sustainability, whether monitoring human impacts, fire effects, climate change impacts or extended drought.

Vision Statement--Wood products and carbon benefits (Pg. 2)

Comment: We are not debating that there are carbon benefits of at least medium-term when wood fiber is “stored” as wood products. What should be questioned in much greater detail is the suggestion that “carbon storage in wood products” is the end of the conversation regarding a viable carbon sequestration strategy. Additional carbon cycle questions should include:

- What are the carbon implications of relying on the increased housing market as a sequestration strategy?
- How much California farm land will be paved over to support more subdivisions?

- How many new units will be built in high and very high fire hazard zones, increasing fire risk?
- How will the expected increased housing market contribute or detract from the historic model of car-dependent subdivisions in California?
- What do changing fire regimes, extended droughts, lower snow pack, and limited water supplies mean to the support of wood products (growing the housing market) as a carbon sequestration strategy?
- What portion of these wood products travel across oceans via container shipping that currently is assessed no carbon burden, as per the recent COP21 agreement?

Need to shift the focus from wood products to older, more natural forests.

Comment: The importance of harvested wood products as a carbon store is often overstated, as these products do not actually increase the total amount of carbon taken up. Instead, more emphasis should be placed on creating older, more natural forests which can create a net increase in total carbon stocks.

The Vision for California’s Forests (page 12) should incorporate clear measures for assessing increased “complexity” and “variable stand structures” and for assessing biodiversity benefits (or losses) from specific management practices with appropriate scales of space and time. Emphasis should be on creating older, more resilient forest landscapes and sustaining ecosystem processes and biodiversity at the watershed scale.

Management for the long-term: The “protect” and “enhance” management strategy (pages 22-24) recognizes that there are many forests below their ecological potential for carbon sequestration, watershed function, and wildlife habitat. Improving the ecological potential of these forests involves not just short-term restoration activities, but also acknowledging that these forests need time to realize this potential in terms of shifting unstable conditions to more stable conditions in an active fire regime. We support the notion that there is a monetary value to that time that competes with other economic pressures, and that it is necessary to “secure” more private land for the long-term, via conservation easements or other means. “Secure” means more than title or easement purchase. In the long run “secure” means managing landscapes in fire-associated ecosystems for fire resilience, biodiversity, and carbon stability versus short-term economic gain.

3. Intent to use Best Available Science (Pg. 2) and developing near-, medium-, and longer-term targets for carbon sequestration, black carbon emissions or GHG emissions.

Comment: The criteria used to measure progress in meeting carbon goals need to calibrate to specific ecosystems and their specific vegetation types and fire regimes on a particular landscape. Key natural disturbance processes or the decades-long need to “re-arrange” forest carbon stocks to resemble those conditions under a natural fire regime will take time.

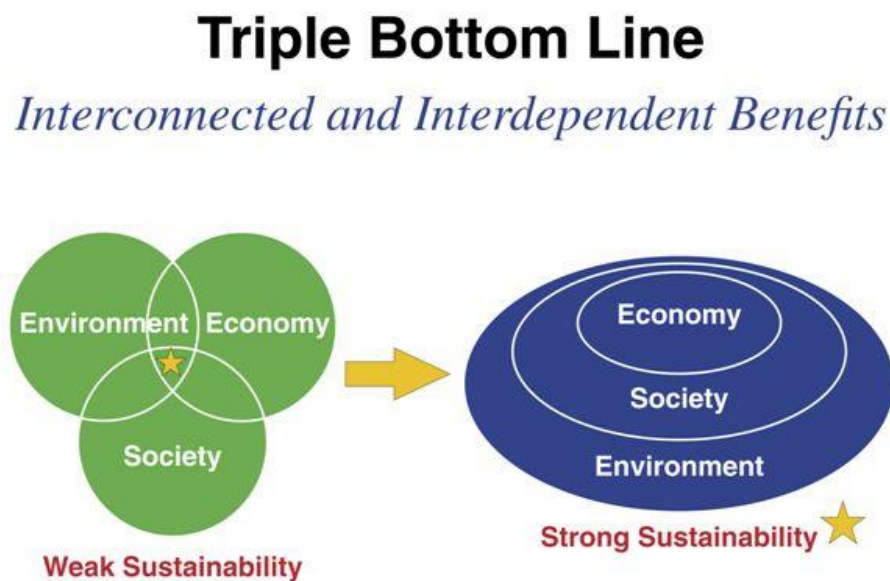
There are serious “carbon dues” to be paid in the short and medium term due to a century of fire suppression, intentional fire exclusion, and past management decisions including the high-grading and clear-cutting of large, fire resilient trees. It is critical to ensure that fire use emissions and black carbon are not called out as a climate “bad” when significant increases in fire use at landscape scales is a key management tool for building forest resilience and stabilizing carbon long-term, while protecting multiple public benefits (North et al. 2012; North et al. 2015).

Prioritizing opportunity: The priority areas (page 27) focus on high hazard areas, unique resource values, and high population levels. This is a focus on the areas that are under threat, but there is an equal need to focus priority investments on areas of opportunity. These opportunity areas are those that provide important ecosystem services and co-benefits such as water provision, have the potential to store significant amounts of carbon, and could be managed for an older stand structure.

Strategies that support research and development of bioenergy (page 25) should focus on appropriately scaled community-based facilities with state-of-art emissions technologies that combine heat and power production from excess forest waste material—material that would normally be pile burned that can supply multiple public benefits.

4. Sustainability definitions related to ecology and cultural context.

Comment: Weak Sustainability and concepts such as the debunked “3-legged stool” model, coupled with existing trends and conditions of forest resources, strongly suggest Concept Paper recommendations should reflect and be built upon a foundation of Strong Sustainability and grounded in Best Available Science information.



Source: Maureen Hart - Sustainable Measures

**(Source: Figure 1.1 Triple Bottom Line: interconnected and interdependent benefits
USDA, Forest Service, National Report on Sustainable Forests—2010, p.1-2)**

The concept of Strong Sustainability depicted here is at the heart of the USDA, Forest Service vision for sustainability: “The earlier thinking about sustainability (as shown at the left side of figure I-1 and referred to as Weak Sustainability) envisioned the environmental, social, and economic realms as intersecting, yet separate, parts of a system. More recently, thinking about the relationship between these three realms has evolved, and today, the depiction of sustainability shown on the right hand side of figure I-1 (Strong Sustainability) is the one adopted by this report.”

The Forest Service goes on to state, “This updated model reflects the understanding that the environmental realm is the foundation of strong sustainability because the environment provides natural goods and services that cannot be obtained through any other means. Human society cannot exist without the environment, which provides the basic necessities of life: air, water, food, energy, and raw materials. The human economy depends on people and social interaction. The core concept of strong sustainability is the benefits of nature are irreplaceable and that the entire economy is reliant on society, which in turn is entirely dependent on the environment. This emphasizes the interdependencies between our society, our economy, and the natural environment.”

Because California has led the nation in its response to climate change, we believe that it is equally appropriate for California to adopt a “Strong Sustainability” foundation in its policy decisions included in the FCAT Concept Paper.

Key points of a Strong Sustainability framework for the Concept Paper would include promoting “carbon worthy” recommendations for funding that include:

- Creation of measurable sustainability criteria for a representative suite of biodiversity components including wildlife habitat and populations, forest ecological integrity requirements that limit homogenous stand structure and composition, and significant reintroduction of fire at appropriate ecological scales for various vegetation types and fire regimes should be supported.
- Promotion of uneven-aged management, with significant portions of the landscape (public and private) in fire-resilient, old forest condition should be supported.
- Forest fragmentation is defined ecologically and not simply by land cover type. Conditions that enhance connectivity and diversity of vegetation types in natural systems, and stand structures that are resilient to fire should be supported.
- Fire suppression is limited to within, and adjacent to, communities while prescribed fire and managed natural ignitions are expected, planned for and promoted in the wildlands of California when occurring within the natural range of variation for specific fire regime and when public safety is not likely to be compromised.

- Fire Safe and FireWise, USA community-based fire planning, community and home-ignition zone treatments and programs that build fire awareness should be supported to help communities better understand and live with fire.

5. State and Federal Wildland Fire Management Goals and Strategies.

Comment: Currently both State and Federal Wildland Fire Management goals and strategies retain a strong suppression orientation. Federal land managers have in addition, authority to manage natural ignitions for multiple ecological and other benefits such as protection of public safety. The California State Fire Plan support prescribed fire use, but not the management of natural ignitions.

The best available fire science (Stephens et al. 2007; Marlon et al. 2012; North et al. 2012; North et al. 2015; Hessberg et al. 2016; Parks et al. 2016) has called out for increased use of natural ignitions to return to a level of fire on the California landscape that approaches the natural fire regimes associated with current existing vegetation types. California’s forested landscapes remain forested and strongly tied to the fire regimes having co-evolved over tens of thousands of years.

Sierra Forest Legacy strongly recommends that the Concept Paper adopt collaborative, cross-jurisdictional use of natural ignitions to bring fire back into California’s forests at ecologically significant scales. Logging alone can’t come close to treating enough acres (North et al. 2012).

We are in a serious and dangerous fuels build-up backlog resulting from a century of fire exclusion. It is time to end the fire exclusion era with bold measures supporting managed fire use when fires are in wildlands and burning within Natural Range of Variation (NRV). Low and mixed-severity fire is the general fire regime for the Sierra Nevada pine and mixed conifer forests. Wildlands can include lands near communities (commonly referred to as the “threat zone”) such as in the recent forest plan revision at Lake Tahoe Basin Management Unit, where fire use and community fire protection are tied to a collaborative vision of living with fire.

As stated (page 4) of the Concept Paper, “managers will have to learn to work with, not against, the time-varying influence of climate on widespread fire years . . . (Swetnam et al. 2011).”

6. Characterizations of past human activities impacts are problematic for several reasons.

First, statements regarding fire suppression and past management in the Concept Paper are contradictory as mentioned above. Second, the statement on page 4 is misleading and poorly describes the role of weather, climate, topography and other factors. The suggestion that, “Past human activities, such as fire suppression and logging, influence acres burned, but the impacts are small when compared to drought, wind and temperature” lacks the fundamental fact that past management, fire suppression and fire exclusion are all related to the critical factor in all fire behavior—fuel. Absent the uncharacteristic fuel conditions and stand structure changes related to

a century of old growth logging and fire suppression, forests are much better prepared to withstand changes in climate, drought, wind, beetle outbreaks and other factors. While it is true that uncharacteristic fire behavior is influenced by many factors, fire has been a part of the Sierra Nevada since soon after the Sierra uplift (10 million years ago). Dry periods, wind and temperature fluctuations have been a part of the Earth's ecosystem processes since time began. What has changed in the past century is the aggressive human-caused disruption of fire as a critical ecological process and the persistent removal of larger fire-resilient trees, dramatically altering the historic fire regimes associated with California's diverse, fire-associated vegetation types. The legacy of fire suppression and past management are directly related to fuel conditions that destabilize the forest landscape in California today. Today we are in a major fire deficit where "current levels of fire activity are clearly out of equilibrium with contemporary climate conditions" (Marlon et al. 2011).

7. Forest treatment recommendations (understory thinning, surface fuel treatments, prescribed fire) p.10.

Comment: The Concept Paper's recommendations should be clear about specific treatments supported within the context of the State SRA and GHG fund utilization. Most important in terms of fuels management are actions that break the continuity between surface and ladder fuels in the understory and adjacent tree crowns. The following treatments and spatial scales are recommended:

- Funds should support the planning and implementation of landscape scale (>10,000 ac to 100,000-acre planning units) prescribed fire use across jurisdictions prioritized by ecological need, potential for public benefits, level of fire return interval departure, resources at risk and strategic ability to implement.
- Managed natural ignitions, burning at low and mixed-severity, are supported by funding pre-ignition planning across multiple jurisdictions and increases in logistical support (trained fire use teams) to take advantage of multiple ignitions without drawing on back up, stand-by suppression personnel.
- Support and fund, as a top priority, surface and ladder fuel treatments. Surface and ladder fuels are the primary driver of fire behavior. Generally, these ladder fuels are sixteen inches and under (North et al. 2009). This focus also allows for the removal of overly dense small trees as part of the effort to lower small tree densities to allow more growing space and lower fire risk for larger, fire resilient trees.

For "working landscapes,"¹ projects that utilize fire and un-even aged management should be supported.

¹ "Working landscapes" is another poorly defined and socially questionable term since there is seldom a discussion of what the "work" actually is or whether it has positive or negative implications for forest ecology and resilience, carbon stability or public health.

8. Carbon stability in strongly fire-associated landscapes in California

“Accumulating evidence suggests that in Mediterranean-climate forests the optimal level of carbon storage in living trees is much less than what the site can maximally support at a given point in time, and strongly reflects the disturbance regime that it grows under (North and Hurteau, 2011; Collins et al. 2015)” (Page 4, Concept Paper).

Comment:

Timeframes to develop forest carbon sinks given carbon emissions tradeoffs related to fire use, thinning and other efforts to build resilient forests may be underestimated and understated. Risk of under-estimating climate change impacts and carbon emissions (Hurteau et al. 2014) require some level of worst-case planning which may push current policy in areas of air quality controls to gain longer term benefits for forests and public health in the long run.

9. Characterization of timber harvest declines and tree mortality (p. 17- 8)

Comment: Timber harvest declines (McIver et al. 2015) in California are characterized as negative impacts to California’s economy and forests. Differences in forest management guidance, law, public benefits, etc., under different jurisdictions, regulations and visions of sustainability are not addressed in the Concept Paper. It therefore presents an inaccurate, unbalanced and problematic representation of federal land management that maligns the broader Forest Service mandate to protect biodiversity, recreation, water quality, and other values on public lands. The Concept Paper presents an arbitrary and unsupported bias toward industrial timber management. One example is that there is no carbon accounting (i.e., burden assigned) to all the wood products that container-ship to and from foreign counties (COP 21 limitations on aviation and container shipping).

There are several references in the Concept Paper to fire suppression and past management as being the root cause of unsustainable forest conditions (p.4) and elsewhere. The reduction in timber harvest that included high-grading and clear-cutting old growth forests, especially during the 1980s on public lands, is something to celebrate, not mourn. This bias towards industrial timber practice and its questionable carbon benefits should be struck from the document.

10. “Wilderness is unmanaged land” (p.18)

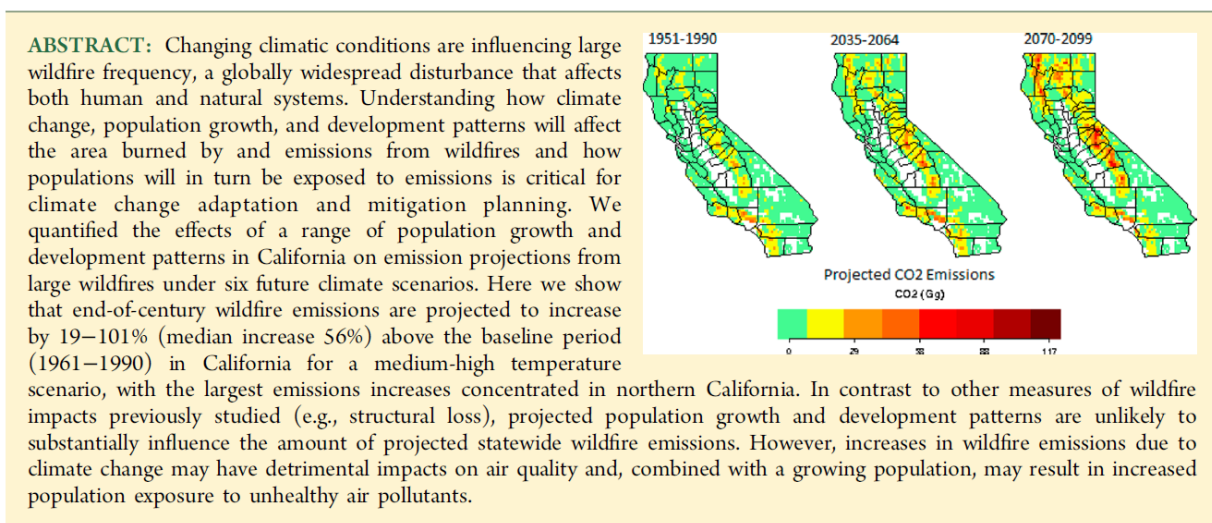
Comment: The negative characterization of wilderness is arbitrary and problematic for its lack of understanding of the purpose and mandate to protect wilderness values (which aren’t even mentioned). First, there would be little possibility to recover economic value in most of the wilderness areas of California, even if there were no rules. The steep and rugged terrain, high potential for resource damage, lower value wood, extreme haul distances, etc., are self-evident.

Wilderness lands are managed for wilderness values under federal and state laws, and managed natural ignitions there are an appropriate management tool when allowed to function and not inappropriately extinguished by a flawed and over-zealous fire suppression strategy.

The flawed characterization of Forest Service wilderness should be stricken from the document.

11. Important additional references, with brief annotation, that can better inform the Concept Paper.

Hurteau et al. 2014: Examination of various wildfire emissions scenarios with median increase of 56% above baseline period with largest increases in northern California. Promotes prescribed fire use to reduce wildfire emissions.



Hessburg et al. 2016: A meta-examination of challenges related to restoration of forest resilience, active fire use, value of large old trees, and reduction of surface and ladder fuels which can greatly reduce likelihood of severe fire behavior; need to reduce barriers to fire use. No known ecological benefits from post-fire salvage of large tree components.

Parks et al. 2016: Assisting plant communities towards a state of equilibrium with emerging climate through thinning and prescribed fire and managed natural fire. Aggressive suppression will amplify disequilibrium conditions and create increased fire severity in future decades.

North et al. 2009 (GTR-220) calls out for extensive fire use, breaking fuel continuity between surface and ladder fuels and tree crowns, disturbance based management, and retention and creation of heterogeneity. Since 2009, GTR-220 has been used across most Sierra Nevada national forests to collaboratively develop marking guidelines that try to emulate natural disturbance patterns and maintain important ecological attributes.

North et al. 2012: Promotes increasing the scale of low and moderate-severity fire which would have substantial ecological and economics benefits if implemented soon. Uses mean historic fire return interval (HFRI) to identify a 487,846 ac/yr. (Table 1) as a level of annual fire occurrence in the Sierra Nevada under historic natural fire regime. Discusses remedies and risks of ignoring this fire deficit.

North et al. 2015: Analyzes constraints on mechanical treatments in the Sierra Nevada bioregion that limit getting to necessary pace and scale of restoration. Found that while 58% of national forest lands are productive forests, 25% are available for mechanical treatments with limited ability to affect wildfire extent and severity. Primary constraints are steep slopes and road access. Efforts to increase the pace and scale of fuels reduction and forest restoration are unlikely to succeed without more extensive and innovative use of managed fire.

North et al. 2015: Reform forest fire management. Agency incentives undermine policy effectiveness. Suppression generally begets larger, more intense wildfires. Researchers recommend increased fire use and change in agency management culture. Increase outreach to public regarding the inevitability of fire and ecological benefits build support for fire use and smoke tolerance.

Meyer 2015: Wildfires managed with resource objectives benefit forests. Compared to the natural range of variation (NRV) of fire effects, managed fire effects compare favorably to NRV while fire suppression effects are outside the range of NRV in southern Sierra Nevada in examination of 17 wildfires.

12. The reference to Simard et al. 2010

Comment: We could not find the reference but did find a Simard et al. 2011 reference that supports a different conclusion than the one cited on page 7. The relationship of tree mortality to fire intensity (in Rocky Mountain lodgepole pine) is complicated and is based upon many factors including mortality stage, weather and other factors.

Finally, thank you for mentioning and support the multi-stakeholder **Fire MOU Partnership** http://www.sierraforestlegacy.org/CF_ManagingFire/FireMOU.php and its possibilities to achieve large-landscape fire reintroduction through prescribed fire and use of natural ignitions. If scale matters like we think it does, greatly expanding fire use is one of the most important tools we have to stabilize forest carbon stocks in the long term.

Thank you for this opportunity to comment on the Forest Carbon Plan Concept Paper.



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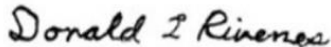
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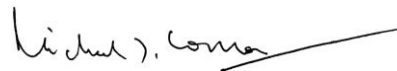
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